

**A New Species of *Boccardia* (Polychaeta: Spionidae)
from the Galápagos Islands and a Redescription
of *Boccardia basilaria* Hartman from
Southern California**

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A new species of *Boccardia* is described from shallow subtidal coral heads of Academy Bay, Santa Cruz Island, Galápagos Islands. The species is a borer and related to other species from the eastern Pacific. *Boccardia basilaria* Hartman, a close relative of the new Galápagos species occurs in subtidal benthic habitats of the southern California continental shelf. The species is redescribed and several deficiencies in its original description are corrected.

As revised by Blake and Kudenov (1978), the genus *Boccardia* Carrazzi is restricted to spionids having branchiae from setiger 2 and two types of major spines in the modified setiger 5. Species having only one type of major spine are now included in the genus *Boccardiella* Blake and Kudenov.

Most of the seventeen known species of *Boccardia* have been well described in a series of papers (Woodwick 1963a, b; Blake 1966, 1979, 1981; Blake and Kudenov 1978; Blake and Woodwick 1971; Rainer 1973; Read 1975). Nine species occur in the eastern Pacific of which eight are endemic.

While examining spionid collections in the U.S. National Museum, an undescribed species of *Boccardia* was discovered among materials from the Galápagos Islands collected during the Southeast Pacific Biological and Oceanographic Program of 1965-66. The new species, described below, is part of an eastern Pacific species group having modified spines in the posterior notopodia. While studying this new form, it was necessary to examine type specimens of the closely related *B. basilaria* Hartman from southern California. Several important characteristics not noted in the original description (Hartman 1961) necessitate a redescription of that species.

Boccardia galapagense new species

Figure 1

Material examined.—GALÁPAGOS ISLANDS, Santa Cruz Island, Academy Bay, Anton Bruun Sta. 66128, 0°44.50'S; 90°18.35'W, 23 May 1966, rocky point near Karl Angermeyer's residence, in coral head on rock near steep dropoff to muddy-sand bottom with scattered coral heads, 14 m, coll. S. E. Earle and D. Wallen, SCUBA, holotype (USNM 80487).

Description.—Holotype posteriorly incomplete, large, 22 mm long, 1.2 mm wide for approximately 120 setigers. Color in alcohol: brown, with dark reticulated dorsolateral pigment on prostomium.

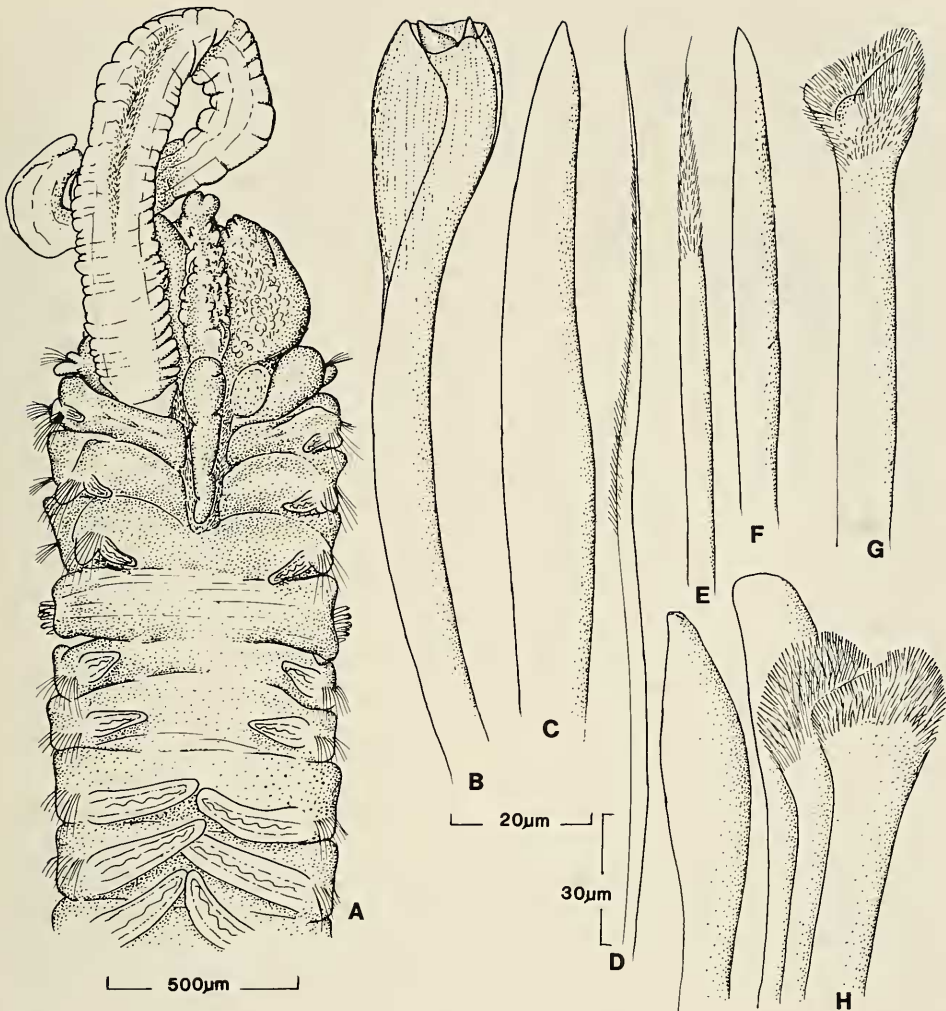


Fig. 1. *Boccardia galapagense*. A, Anterior end in dorsal view; B, Hooded hook of anterior neuropodium; C, Unhooded hook of posterior neuropodium; D, Capillary notoseta of posterior setiger; E, Unworn posterior notopodial spine; F, Worn posterior notopodial spine; G, Bristle-topped major spine from setiger 5; H, Group of two simple, non-bristled and two bristle-topped major spines from setiger 5.

Prostomium narrow, weakly incised anteriorly, followed by narrow, papillated medial portion and with folded caruncle continuing to posterior margin of setiger 3; occipital tentacle lacking, but with anterior edge of caruncle partially elevated, overlying anterior portion of prostomium; without eyes; prominent nuchal cilia present lateral to caruncle (Fig. 1A). Peristomium well developed, slightly inflated; palps thick, with numerous folds along ciliated groove, extending posteriorly for about 12 setigers.

Setiger 1 reduced, lacking notopodium and notosetae; neuropodium short, fingerlike (Fig. 1A). Setigers 2–4, 6 with broad, thin, bladelike elliptical postsetal notopodial lamellae; subsequent notopodia not apparent.

Anterior notosetae and neurosetae of setigers 1–4, 6 short, unilimbate capillaries, arranged in two rows, with setae of first row shortest, with fine granulations on shaft and clear sheath; setae of second row longest, lacking granulations. Notosetae of middle and posterior setigers longer, lacking granulations; posterior notosetae including 5–6 fimbriated capillaries (Fig. 1D) and 2–3 spines; each spine with finely bristled, pointed tips when new (Fig. 1E): with blunted, non-bristled tip when worn (Fig. 1F). Bidentate hooded hooks from neuropodia of setiger 7, numbering 5–6 at first accompanied by 1–2 very fine capillaries; hooks, increasing to 7–8 per neuropodium in middle setigers; anterior hooded hooks with large, expanded hood, having fine striations; with wide angle between main fang and shaft and about 80° angle between apical tooth and main fang (Fig. 1B); hooks of posterior setigers numbering 3–4 per neuropodium losing apical teeth and hoods, becoming straighter and spinelike (Fig. 1C); presence of spines in both noto- and neuropodia of posterior setigers providing distinct armature.

Modified setiger 5 not heavily muscularized, only slightly larger than preceding and succeeding setigers (Fig. 1A); setae including curved row of two types of major spines and neuropodial fascicle of capillaries; no superior capillary fascicle; major spines of two types: 1) dorsal row of 7 smooth, non-bristled, spines with slightly expanded ends; 2) ventral row of 7 bristle topped spines with expanded tips; when viewed dorsally, these spines with apical concavity open to one side with terminal, smooth knob; cavity not seen when viewed from ventral side.

Branchiae present on setigers 2–4, 6 and following setigers to posterior end of fragment. Branchiae of setigers 2–4, 6–7 shortest, increasing to full size by setiger 9 (Fig. 1A); branchiae broad, thin nearly concealing dorsal surface in middle of body segments; posterior branchiae short, fingerlike. Pygidium unknown.

Remarks.—*Boccardia galapagense* is closely related to *B. pugettensis* Blake from British Columbia and Washington, *B. anopthalama* Rioja from western Mexico and *B. basilaria* Hartman from southern California in having posterior notopodial spines. The species is closest to *B. basilaria* in lacking notosetae on setiger 1 and in the manner in which bidentate hooded hooks change to unidentate spinelike setae in posterior setigers. *B. galapagense* differs from *B. basilaria* in having a papillated, narrow, weakly incised prostomium lacking eyes, bristle-topped major spines of setiger 5 with a distinct apical concavity on the posterior side of the expanded bristled tip, and posterior unidentate neuropodial spines lacking hoods. *B. basilaria*, on the other hand, has a more typical strongly incised non-papillated prostomium with four eyes, bristles completely cover the expanded tips of the major spines and the posterior unidentate spines of the neuropodia bear a distinct hood.

Distribution.—*B. galapagense* is known only from the Galápagos Islands where it bores into shallow subtidal coral rock.

Boccardia basilaria Hartman, 1961

Figure 2

Boccardia basilaria Hartman 1961:95–96, pl. 13, figs. 1–7; 1969:89–90, 5 figs.

Material examined.—CALIFORNIA, 8.7 miles from Santa Barbara Point Light, Velero Sta. 5161-57, 34°24'35"N; 119°54'00"W, 2 July 1957, 20.9 m, green mud, Orange Peel Grab, holotype and 50+ paratypes (AHF Poly 0636–7).

Description.—Holotype complete 18.5 mm long and 1.2 mm wide for 65 se-

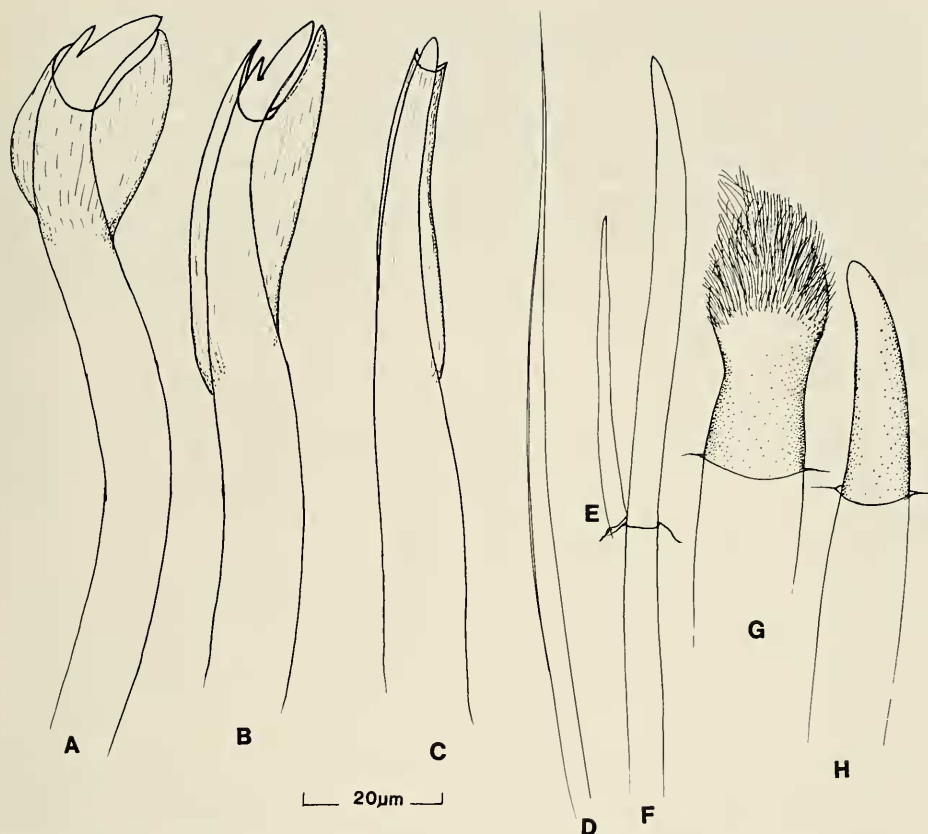


Fig. 2. *Boccardia basilaria*. A, Hooded hook from anterior neuropodium; B, Hooded hook from middle neuropodium; C, Hooded hook from posterior neuropodium; D, Capillary notoseta from posterior row of anterior setiger; E-F, Spines from posterior notopodia; G, Bristle-topped spine from setiger 5; H, Simple major spine from setiger 5.

tigerous segments; most paratypes smaller, incomplete. Color in alcohol: light brown with single medial black pigment spot on 6–10 segments from setiger 5; middle and posterior segments of some specimens with brown reticulated pigment on dorsum and similar pigment on prostomium and anterior ventral areas of some specimens. Body dorsoventrally flattened anteriorly, cylindrical posteriorly.

Prostomium incised anteriorly, forming 2 diverging lobes, continuing posteriorly as caruncle to end of setiger 3; no occipital tentacle, but prostomium with dorsal protuberance at level of setiger 1; with 2 pair of eyes.

Setiger 1 biramous, dorsally elevated; with elliptical neuropodial postsetal lamellae and short, fingerlike notopodial lamellae; setigers 2–4, 6 and subsequent segments with thin, leaflike elliptical noto- and neuropodial postsetal lamellae; notopodial lamellae of middle segments lower, more elongate; neuropodial lamellae less rounded, longer.

Notosetae of setiger 1 simple fascicle of capillaries; setigers 2–4, 6 and following segments with well-developed fascicles of capillary notosetae arranged in two rows with setae of first row shorter, thicker, sharply curved with fimbriated edge; setae

of posterior row longer, straight, without fimbriated edge (Fig. 2D). Posterior notopodial spines present in posterior setigers; spines simple, numbering 1–2 per notopodium (Figs. 2E, F), accompanied by 2–4 long, non-limbated capillaries. Neurosetae of setigers 2–4, and 6 similar in arrangement and form to notosetae. Most capillaries replaced by hooded hooks from setiger 7; hooks numbering 7–8 in a fascicle, accompanied by 1–3 capillaries in ventralmost position; hooks strongly recurved, with inflated hood and with unusually wide angle between main fang and shaft, apical tooth reduced and closely adhering to main fang (Fig. 2A); in middle setigers apical tooth becoming reduced (Fig. 2B) and finally lost in posterior neuropodia (Fig. 2C); hoods of unidentate hooks in posterior setigers reduced, closely applied to shaft. Neuropodial hooks and notopodial spines providing distinct armature to posterior end.

Modified setiger 5 about twice size of preceding and succeeding setigers; setae including curved row of two types of major spines and neuropodial bundle of about fifteen thin capillaries with finely granulated shafts and narrow fimbriated edge; dorsal capillaries lacking. Major spines include dorsal row of 2–3 simple falcate, non-bristled spines (Fig. 2H) and ventral row of 7–8 bristle topped spines with bristles completely enclosing tip (Fig. 2G).

Branchiae present on setigers 2–4, 6 and subsequent segments, absent from last 20 or so setigers; all branchiae, short, widely spaced, located closely to notopodium and nearly fused basally to notopodial postsetae lamellae; anterior branchiae short, barely extending one-quarter of distance across dorsal midline; branchiae reaching full size by about setiger 15, extending about half distance to dorsal midline.

Pygidium with two lappets located ventral to dorsally positioned anal opening.

Remarks.—In the original description of *B. basilaria*, the posterior notopodial spines were not observed (Hartman 1961), although the unidentate nature of the posterior neuropodial hooks was described. The close similarity of *B. basilaria* and *B. galapagense* has already been discussed (see above) and relationships with some other species were considered in an earlier paper (Blake 1979).

Distribution.—Southern California continental shelf.

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